

# Australian/New Zealand Standard™

## Classification of hazardous areas

### Part 3.2: Examples of area classification—Vehicle workshops, vehicle parking, fuel dispensing stations and aircraft hangars



## **AS/NZS 2430.3.2:2004**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee MS-011, Classification of Hazardous Areas. It was approved on behalf of the Council of Standards Australia on 31 March 2004 and on behalf of the Council of Standards New Zealand on 30 April 2004. It was published on 20 May 2004.

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*This Standard was issued in draft form for comment as DR 03560.*



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### Part 3.2: Examples of area classification—Vehicle workshops, vehicle parking, fuel dispensing stations and aircraft hangars

Originated in Australia as part of AS 1076.2—1977.  
Originated in New Zealand as part of NZS 6101P:1972.  
Previous edition AS/NZS 2430.3.2:1997.  
Second edition 2004.

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Jointly published by Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001, and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 5969 6

## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee MS-011, Classification of Hazardous Areas, to supersede AS/NZS 2430.3.2:1997, *Classification of hazardous areas, Part 3.2: Vehicle workshops, vehicle parking, fuel dispensing stations and aircraft hangars*.

The objective of the AS/NZS 2430.3 series of Standards is to provide guidance to the industries and statutory authorities concerned with the classification of hazardous areas.

Changes to the 1997 edition include—

- (a) incorporation of the three issued amendments;
- (b) rewording of Clauses 5 and 9.1;
- (c) correction of typographical errors;
- (d) alteration of the symbols for hazardous areas zones (to align with AS/NZS 60079.10); and
- (e) update of referenced documents.

This series of Standards details examples of area classification of commonly occurring situations, based on the principles of AS/NZS 60079.10, *Electrical apparatus for explosive gas atmospheres, Part 10: Classification of hazardous areas*.

The AS/NZS 2430.3 series is as follows:

### AS/NZS

|          |                                                                                                         |
|----------|---------------------------------------------------------------------------------------------------------|
| 2430.3   | Classification of hazardous areas—Examples of area classification                                       |
| 2430.3.1 | Part 3.1: General                                                                                       |
| 2430.3.2 | Part 3.2: Vehicle workshops, vehicle parking, fuel dispensing stations and aircraft hangars (this Part) |
| 2430.3.3 | Part 3.3: Flammable liquids                                                                             |
| 2430.3.4 | Part 3.4: Flammable gases                                                                               |
| 2430.3.5 | Part 3.5: Refineries and major processing plants                                                        |
| 2430.3.6 | Part 3.6: Laboratories including fume cupboards and flammable medical agents                            |
| 2430.3.7 | Part 3.7: Landfill gas, sewage treatment and sewage pumping plants                                      |
| 2430.3.8 | Part 3.8: Surface coatings and adhesives                                                                |
| 2430.3.9 | Part 3.9: Miscellaneous                                                                                 |

The AS 2430 series of Standards for classification of hazardous areas used to be formed by AS 2430.1, AS 2430.2 and AS 2430.3.

AS 2430.2 was replaced by AS/NZS 61241.3 in 1999 and AS 2430.1 was replaced by AS/NZS 60079.10 in 2004.

In 1997, AS 2430.3 was split into a Series of nine Parts – 3.1 to 3.9; these initial nine Parts have been superseded by this 2004 edition.

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## STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

## Australian/New Zealand Standard Classification of hazardous areas

### Part 3.2: Examples of area classification—Vehicle workshops, vehicle parking, fuel dispensing stations and aircraft hangars

#### 1 SCOPE

This Standard provides examples of area classification for areas associated with vehicle workshops, vehicle parking, fuel dispensing stations and aircraft hangars. The Standard is part of the AS/NZS 2430.3 series, which recommends the classification of several commonly occurring situations, and should be read in conjunction with AS/NZS 2430.3.1.

#### 2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

##### AS

- |        |                                                                                               |
|--------|-----------------------------------------------------------------------------------------------|
| 1074   | Steel tubes and tubulars for ordinary service                                                 |
| 1482   | Electrical equipment for explosive atmospheres—Protection by ventilation—Type of protection v |
| 2229   | Electrical equipment for explosive atmospheres—Electrical systems of dispensing equipment     |
| 2229.2 | Part 2: Liquefied petroleum gas dispensing equipment                                          |
| 2381   | Electrical equipment for explosive atmospheres—Selection, installation and maintenance        |
| 2381.1 | Part 1: General requirements                                                                  |
| 2746   | Working areas for gas-fuelled vehicles                                                        |

##### AS/NZS

- |          |                                                                   |
|----------|-------------------------------------------------------------------|
| 1596     | Storage and handling of LP gas                                    |
| 2053     | Conduits and fittings for electrical installations                |
| 2430.3   | Classification of hazardous areas—Examples of area classification |
| 2430.3.1 | Part 3.1: General                                                 |
| 2430.3.3 | Part 3.3: Flammable liquids                                       |
| 2430.3.9 | Part 3.9: Miscellaneous                                           |

- |          |                                                    |
|----------|----------------------------------------------------|
| 60079    | Electrical apparatus for explosive gas atmospheres |
| 60079.10 | Part 10: Classification of hazardous areas         |

##### NZS

- |        |                                                                                                                             |
|--------|-----------------------------------------------------------------------------------------------------------------------------|
| 5425.1 | Code of practice for CNG compressors and refuelling stations, Part 1: On site storage and location of equipment             |
| 6109.2 | Electrical systems of dispensing equipment for explosives atmospheres, Part 2: Liquefied petroleum gas dispensing equipment |

##### AG (The Australian Gas Association)

- |     |                                              |
|-----|----------------------------------------------|
| 901 | Code of Practice for NGV Refuelling Stations |
|-----|----------------------------------------------|

### 3 DEFINITIONS

For the purposes of this Standard the definitions in AS/NZS 60079.10 and AS/NZS 2430.3.1 and those below apply. Adequately and inadequately ventilated areas/locations are detailed in AS/NZS 2430.3.1, Appendix B.

#### 3.1 Compressed natural gas (CNG)

A compressed gaseous fuel composed predominantly of methane (CH<sub>4</sub>), commonly sourced from natural gas and used as a vehicular fuel.

#### 3.2 Dispensing cabinet

Part of the cabinet forming a fuel dispensing unit which encloses the hydraulic components other than the delivery hose, delivery pipe, breakaway coupling and delivery nozzle.

#### 3.3 Fuel dispensing unit

An assembly of equipment intended for the delivery of fuel from a supply point through a nozzle to a receiving vessel. This includes equipment for dispensing petrol, liquefied petroleum gas and compressed natural gas.

#### 3.4 Liquefied petroleum gas (LPG)

Material which is composed of any of the following hydrocarbons, or mixtures of all or any of them: propane (C<sub>3</sub>H<sub>8</sub>), propylene (C<sub>3</sub>H<sub>6</sub>), butane (C<sub>4</sub>H<sub>10</sub>) and butylene (C<sub>4</sub>H<sub>8</sub>).

#### 3.5 Natural gas (NG)

Hydrocarbon gas composed predominantly of methane (CH<sub>4</sub>).

#### 3.6 Natural gas for vehicles (NGV)

Same as CNG (see Clause 3.1), but preferred designation.

### 4 VEHICLE WORKSHOPS

#### 4.1 Scope

Vehicle workshops are areas capable of holding at least three vehicles, used for service or repair of these vehicles and where such service or repair can give rise to escape of flammable liquids or vapours.

Classification of hazardous areas also applies to areas in which gas-fuelled vehicles are stored or serviced, provided that, in Australia, the workshop complies with AS 2746.

##### NOTES:

- 1 For the classification of areas where tank-vehicles are garaged or areas where maintenance operations may be carried out on such vehicles, see AS/NZS 2430.3.3.
- 2 For the classification of areas where spray painting or spraying operations may occur, see AS/NZS 2430.3.9.
- 3 For the classification of workshops with pumps or similar devices for the dispensing of petrol or other flammable liquids and gases, see Clause 7.

#### 4.2 Classification of hazardous areas

##### 4.2.1 Workshops at or above ground or street level

Floors at or above adjacent ground or street level .....NH

NOTE: Where significant loss of flammable fuel is likely to occur, use AS/NZS 60079.10 to classify the area.

**4.2.2 Workshops below ground or street level**

Classification is as follows:

**(a) Ventilated by natural means**

For each floor below adjacent ground or street level which is ventilated by natural means—

the entire area up to 0.5 m above the bottom of the outside doors or openings which provide the natural ventilation.....**Zone 2**

**(b) Ventilated by mechanical means**

For each floor below adjacent ground or street level which is ventilated by mechanical means—

the entire floor.....**Zone 2**

The authority may deem that the **Zone 2** area only extends up to 0.5 m above each floor below adjacent ground or street level, provided that the workshop is mechanically ventilated so that six air changes per hour are exhausted from the workshop through exhaust registers, located so that the bases are not more than 0.1 m above the floor and that extensive dead spots do not occur at floor level.

**4.2.3 Depressions, pits or sumps**

Any unventilated depression, pit or sump below adjacent ground or street level is classified as **Zone 1**, which extends up to floor level, except that an individual unventilated depression, pit or sump may be classified by the authority as .....**Zone 2**

Any depression, pit or sump provided with mechanical ventilation complying with AS 1482 ..... **NH**

**5 VEHICLE PARKING AND STANDING AREAS****5.1 Scope**

Vehicle parking and standing areas are areas which are used exclusively for the parking or standing of vehicles and which will not be used for other than minor service or repair operations on such parked vehicles.

NOTE: Classifications have been made on the assumption that hazardous vapours caused by spillage or escape of liquid or gaseous fuels will be cleared either by—

- (a) mechanical ventilation (required by the relevant authority where toxic gases are present); or
- (b) natural ventilation.

**5.2 Classification of hazardous areas**

**5.2.1 Vehicle parking or standing area.....NH**

**5.2.2 Depressions, pits or sumps**

Where a depression, pit, sump, or the like is provided for the collection of waste from a graded floor, the entire volume of the depression, pit, sump, or the like.....**Zone 2**

**5.2.3 Vehicle turntables**

Classification is as follows:

- (a) The depression and drive motor pit under vehicle turntable installed in an adequately ventilated area above adjacent street or ground level.....**NH**
- (b) The depression and drive motor pit under vehicle turntable installed in areas below adjacent street or ground level and not ventilated in accordance with AS 1482 .....**Zone 2**

## 6 RESIDENTIAL GARAGES

### 6.1 Scope

Residential garages are rooms or substantially enclosed portions of a building or room in which not more than three vehicles may be garaged and which will not be used for other than minor service or repair operations on such vehicles.

Where more than three vehicles may be garaged or where a pit is provided, the location is classified as for a vehicle parking area in accordance with Clause 5.

### 6.2 Classification of hazardous areas

#### 6.2.1 Residential garage at or above ground or street level

Where the floor is at or above adjacent ground or street level, and where there is at least one outside door at or below floor level, the entire garage area ..... **NH**

#### 6.2.2 Residential garage below ground or street level

Where the floor is below adjacent ground or street level, the entire area of the garage or of any enclosed space which includes the garage, up to a level of 0.1 m above the garage floor ..... **Zone 2**

## 7 PETROL, LPG AND NGV DISPENSING STATIONS

### 7.1 Scope

Petrol, LPG and NGV dispensing stations are areas where petrol, LPG or NGV are transferred by means of a dispensing pump, or similar dispensing device, to the fuel tanks (including auxiliary fuel tanks) of self-propelled vehicles or waterborne craft.

In the case of multi-product dispenser units, the classification zones applicable to the typical single product dispensers are overlaid on the units, with the severest composite classification to be used.

#### NOTES:

- 1 The term 'petrol' includes petrol/alcohol mixtures and any other volatile flammable liquid fuels.
- 2 It is appreciated that some motor vehicles fitted with electrical equipment unsuitable for hazardous areas may unavoidably remain in or pass through hazardous areas classified in Clause 7.

### 7.2 Classification of hazardous areas

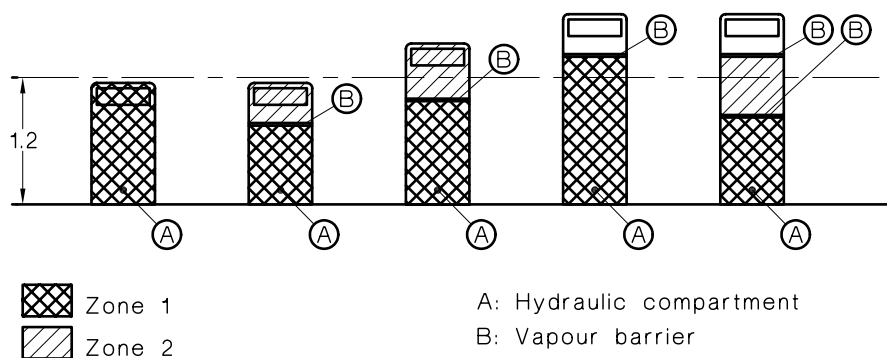
#### 7.2.1 Interior of petrol dispensing units in adequately ventilated locations (see Figure 7.1)

Classification is as follows:

- (a) For a dispensing unit without vapour barriers, entire cabinet.....**Zone 1**
- (b) For a dispensing unit with a single vapour barrier less than 1.2 m above the base of the dispenser—
  - (i) below the vapour barrier .....**Zone 1**
  - (ii) above the vapour barrier .....**Zone 2**
- (c) For a dispensing unit with a single vapour barrier at least 1.2 m above the base of the dispenser—
  - (i) below the vapour barrier .....**Zone 1**
  - (ii) above the vapour barrier .....**NH**

- (d) For a dispensing unit with two vapour barriers and the upper vapour barrier is at least 1.2 m above the base of the dispenser
- (i) below the lower vapour barrier.....**Zone 1**
  - (ii) between the vapour barriers .....**Zone 2**
  - (iii) above the upper vapour barrier.....**NH**

NOTE: The above classifications are based on all compartments of the dispensing unit being vented and the hydraulic compartment forming the lowest section of the dispensing unit.



NOTE: All internal compartments are vented.

DIMENSIONS IN METRES

FIGURE 7.1 INTERIOR OF PETROL DISPENSING UNITS IN ADEQUATELY VENTILATED LOCATIONS

### 7.2.2 Exterior of petrol dispensing units in adequately ventilated locations (see Figure 7.2)

Classification is as follows:

- (a) Within 0.05 m above and 0.1 m below the dispenser nozzle spout housing and extending 0.1 m laterally from the dispenser housing (see Figure 7.3).....**Zone 1**
- (b) For dispensers mounted at or near ground level, the area within the space 0.25 m above the base of the dispensing equipment and extending 1 m in all directions horizontally from the dispensing unit .....**Zone 1**
- (c) Within the space 0.5 m laterally of the dispensing equipment to a height of 1.2 m above the base of the dispenser .....**Zone 2**
- (d) Within the space 0.5 m above the driveway or ground level and extending 4 m in all directions horizontally from the dispensing unit or 1 m from the hose nozzle, whichever is the greater .....**Zone 2**

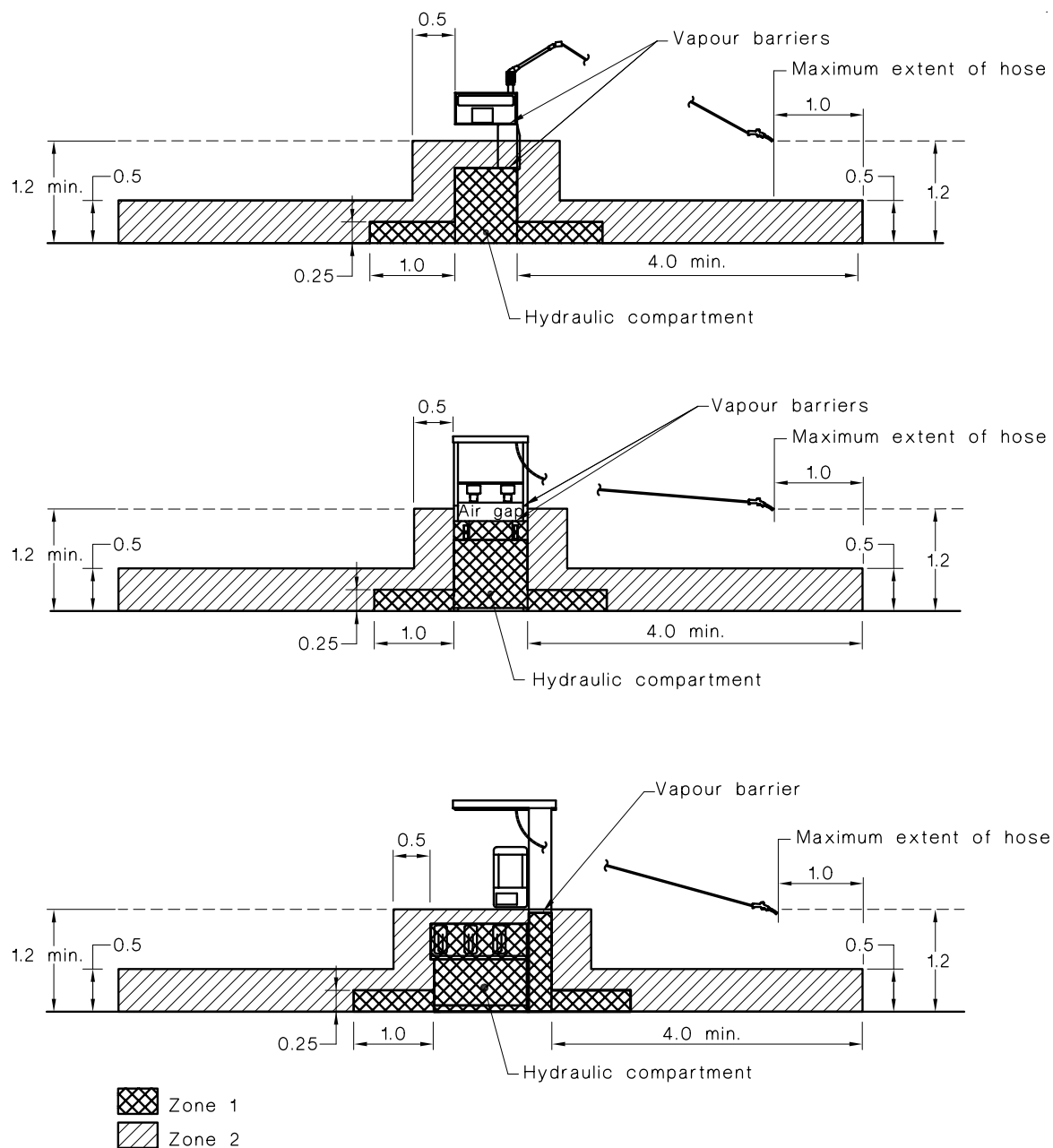
NOTE: The distance of 1 m specified in Item (d) is taken from the end of the hose nozzle held at a height of 1.2 m, at its maximum lateral distance of travel from the dispenser unit in any direction.

### 7.2.3 Exterior of petrol dispensing units mounted on a wharf/jetty in adequately ventilated locations (see Figure 7.4)

Classification is as follows:

- (a) Within 0.05 m above and 0.1 m below the dispenser nozzle spout housing and extending laterally from the dispenser housing 0.1 m (see Figure 7.3).....**Zone 1**

- (b) For dispensers mounted on a wharf/jetty, the area within the space 0.25 m above the base of the dispensing equipment and extending 1 m in all directions horizontally from the dispensing unit .....**Zone 1**
- (c) Within the space 0.5 m laterally of the dispensing unit to a height of 1.2 m above the base of the dispenser.....**Zone 2**
- (d) Within the space 0.5 m above the wharf/jetty and extending 4 m in all directions horizontally from the dispensing unit or 1 m from the hose nozzle, whichever is the greater.....**Zone 2**  
 NOTE: The distance of 1 m specified in Item (d) is taken from the end of the hose nozzle held at a height of 1.2 m, at its maximum lateral distance of travel from the dispenser unit in any direction.
- (e) Within the space adjoining that described in Item (b) splayed outwards 45° and extending down 1.5 m, or to the water level, whichever is lesser .....**Zone 1**
- (f) Within the space adjoining that described in Item (d) splayed outwards 45° extending to the water level .....**Zone 2**



NOTE: All internal compartments are vented.

DIMENSIONS IN METRES

FIGURE 7.2 EXTERIOR OF PETROL DISPENSING UNITS IN ADEQUATELY VENTILATED LOCATIONS